

ABSTRACT

A high-voltage power supply (10) includes: a power scaling section (130) that receives an input voltage signal and converts the input voltage signal to a controllable DC voltage; a push-pull converter (140) for converting the controllable DC voltage to a high-frequency wave; and a voltage multiplier (200) receiving the high-frequency wave generated by the push-pull converter (140) and performing successive voltage doubling operations to generate a high-voltage DC output. In one implementation, the voltage multiplier (200) receives a square wave having a frequency of approximately 100 kHz and outputs an adjustable DC voltage of approximately 0-to-30 kV. In one implementation, the high-voltage power supply (10) includes an insulation system (250) for the voltage multiplier module (200), such an insulation system being formed of n insulating layers and m conducting strips positioned between successive insulating layers.